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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 31 JAN 2006

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Applicant's or agent's file reference 703428PCT		FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/CA2004/001919		International filing date (<i>day/month/year</i>) 04 November 2004 (04-11-2004)	Priority date (<i>day/month/year</i>) 04 November 2003 (04-11-2003)
International Patent Classification (IPC) or national classification and IPC IPC: B60J 7/047 (2006.01)			
Applicant INTIER AUTOMOTIVE CLOSURES INC. ET AL			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u> 5 </u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 40px;">a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of <u> 7 </u> sheets, as follows:</p> <div style="margin-left: 80px;"> <input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. 1 and the Supplemental Box. </div> <p style="margin-left: 40px;">b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____ , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 03 June 2005 (03-06-2005)		Date of completion of this report 25 January 2006 (25-01-2006)	
Name and mailing address of the IPEA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001(819)953-2476		Authorized officer Robert Gruber (819) 953-1889	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/CA2004/001919

Box No. I Basis of the report

1. With regard to the language, this report is based on:
- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- ☒ pages 1-7 and 9-21 as originally filed/furnished
- ☒ pages* 8 received by this Authority on 6 September 2005
- ☐ pages* received by this Authority on _____
- ☒ the claims:
- ☐ pages as originally filed/furnished
- ☐ pages* as amended (together with any statement) under Article 19
- ☒ pages* 22-26 received by this Authority on 6 September 2005
- ☐ pages* received by this Authority on _____
- ☒ the drawings:
- ☒ pages 1/31-31/31 as originally filed/furnished
- ☐ pages* received by this Authority on _____
- ☐ pages* received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
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Box No. IV Lack of unity of invention

1. ☐ In response to the invitation to restrict or pay additional fees the applicant has, within the applicable time limit:
- ☐ restricted the claims
 - ☐ paid additional fees
 - ☐ paid additional fees under protest and, where applicable, the protest fee
 - ☐ paid additional fees under protest but the applicable protest fee was not paid
 - ☐ neither restricted the claims nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
- ☐ complied with
 - ☒ not complied with for the following reasons:

1. Claims 1-19

Pertain to a retractable roof assembly comprising a fixed rail and a movable rail assembly.

2. Claims 20-27

Pertain to a retractable roof assembly comprising a plurality of roof panels moveable to either a closed, intermediate or stowed position.

4. Consequently, this report has been established in respect of the following parts of the international application:

- ☒ all parts
- ☐ the parts relating to claims Nos.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/CA2004/001919**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	<u>1-27</u>	YES
	Claims	<u>NONE</u>	NO
Inventive step (IS)	Claims	<u>1-27</u>	YES
	Claims	<u>NONE</u>	NO
Industrial applicability (IA)	Claims	<u>1-27</u>	YES
	Claims	<u>NONE</u>	NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following document:

D1: US 6,604,782

D1 discloses a retractable roof assembly for a motor vehicle comprising a fixed guideway disposed in a roof opening and a movable guideway located in a rear gate of the vehicle that pivots in relation to the fixed guideway. Panels are slidably engaged with the fixed guideway to cover the roof opening in a closed position. To uncover the roof opening, the movable guideway is pivoted to align with the fixed guideway and the roof panels are slid rearwardly to a stowage position in the rear gate of the vehicle. The rear gate can further pivot to a fully open position or fully closed position under manual power or using a power actuator.

The subject matter of claims 1 and 15 differ from D1 in that the movable guide rail is attached to a portion of the roof frame vs. attached to the rear gate of the vehicle. D1 also does not disclose a linkage assembly operably connected to said movable rail for pivoting and articulating said movable rail relative to said fixed rail when said plurality of roof panels is in said stacked configuration, thereby differing from what is shown in claims 1 and 20. Therefore claims 1, 15 and 20 are considered novel under PCT Article 33(2) and involve an inventive step under PCT Article 33(3). A similar analysis for claim 24 reveals the subject matter as novel and inventive when compared with the prior art.

Claims 2-14, 16-19, 21-23 and 25-27 ultimately depend on claims 1, 15, 20 and 24, respectively, and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Claims 1-27 meet the criteria for Industrial Applicability set out in PCT Article 33(4) because the claimed invention can be made or deemed useful in industry.

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Box No. VIII **Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The description does not comply with PCT Article 5. A statement in an application, such as on page 8, line 26-27, which incorporates by reference an unpublished document, should not be regarded as being part of the description. A person skilled in the art should be able to understand the patent specification without reference to any other document.

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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20
Switzerland

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NOTIFICATION CONCERNING
DOCUMENTS TRANSMITTED

Date of mailing
(day/month/year)

25 January 2006 (25-01-2006)

This International Preliminary Examining Authority transmits herewith the following documents:

(number)

International application No.

PCT/CA2004/001919

1. ☐ demands (Rule 61.1(a)).
2. ☒ 1 copies of international preliminary examination reports and their annexes (Rule 71.1).
3. ☐ other documents (*specify*):

- ☐ The Annex contains a list identifying each document transmitted by the type of document it is, the corresponding international application number and, if necessary, other information.

Name and mailing address of the IPEA/CA
Canadian Intellectual Property Office
Place du Portage I, C114 - 1st Floor, Box PCT
50 Victoria Street
Gatineau, Quebec K1A 0C9
Facsimile No.: 001(819)953-2476

Authorized officer

Chantal Hébert (819) 953-4957

to the fixed rail 34. In particular, each movable rail 40 includes the longitudinally extending first 46 and second 48 cable channels, and the longitudinally extending upper 50 and lower 52 recesses. More specifically, the first 46 and second 48 cable channels, and the upper 50 and lower 52 recesses extend continuously from the front end 36 of the fixed rail 34 to the back end 44 of the movable rail 40.

A rail bracket or scissor insert 37 defining a retention slot 39 is fixedly secured to the fixed rail 34 adjacent the front end 36 thereof, as shown in Figure 3. More specifically, the rail bracket 37 is disposed within the interior portion 45 of each fixed rail 34. The rail bracket 37 is preferably formed from a metal material.

In the preferred embodiment, the fixed 34 and movable 40 rails are each formed from an extruded aluminum. It is, however, appreciated that the fixed 34 and movable 40 rails may be formed from any of numerous materials.

Referring to Figure 5, a retractable roof assembly 53 includes a retractable roof or top, generally indicated at 54, extending longitudinally between the header 32 and the rear decklid 14, and laterally between the side frame members 30 to selectively close the roof opening 31. The roof 54 includes a first roof panel 58, a second roof panel 60, and a third roof panel 62, and is movable between a closed position, shown in Figure 5, a partially open or sunroof position, shown in Figure 6, and a fully open position, shown in Figure 7. In addition, an air deflector 56 is pivotally secured to the header 32, as shown in Figures 5 through 7.

Referring to Figure 8, a panel support structure, generally indicated at 64, supports the movable rail 40. First 70 and second 72 motors are fixedly secured to the panel support structure 64, as is shown in Figure 35. The first motor 70 is operably connected to the first panel 58 via a first cable 74. A full description of the operation of the first motor 70 and cable 74 is disclosed in commonly-owned International Patent Application Number PCT/CA2004/001591 published as International Publication Number WO 2005/021306, the specification of which is hereby incorporated herein by reference.

What is claimed:

1. A retractable roof assembly for a motor vehicle having a rear seat and spaced apart roof side frame members defining a roof opening, said retractable roof assembly comprising:

a split rail assembly including a fixed rail adapted to be fixedly secured to each of the roof side frame members and extending along a portion thereof, and a movable rail extending rearward of said fixed rail along a remaining portion of each of the roof side frame members;

a plurality of roof panels extending between the roof side frame members and slidably engaging said split rail assembly for selective movement into a stacked configuration above said movable rail; and

a linkage assembly operably connected to said movable rail for pivoting and articulating said movable rail relative to said fixed rail when said plurality of roof panels is in said stacked configuration in order to stow said plurality of roof panels behind the rear seat of the motor vehicle such that the entire roof opening is exposed.

2. A retractable roof assembly as set forth in claim 1 wherein said plurality of roof panels includes a forward first roof panel, an intermediate second roof panel, and a rearward third roof panel.

3. A retractable roof assembly as set forth in claim 2 including a carrier assembly coupled to said first roof panel and slidably coupled to said split rail assembly for selectively moving said first and second roof panels to a location above said movable rail such that said plurality of panels is in said stacked configuration.

4. A retractable roof assembly as set forth in claim 3 including a coupling mechanism secured to said second roof panel for selectively coupling said first and second roof panels to one another.

5. A retractable roof assembly as set forth in claim 4 including an actuator operably connected to said linkage assembly for actuating pivotal and

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articulating movement of said plurality of panels behind the rear seat of the motor vehicle.

6. A retractable roof assembly as set forth in claim 5 including a panel support structure fixedly secured to said movable rail for supporting said plurality of panels in said stacked configuration.

7. A retractable roof assembly as set forth in claim 6 including a package tray assembly having a package tray selectively movable to a folded position for allowing stowage of said plurality of panels behind the rear seat.

8. A retractable roof assembly as set forth in claim 7 wherein said carrier assembly includes spaced apart front and rear guides slidably engaging said split rail assembly for moving said first roof panel back and forth along said split rail assembly.

9. A retractable roof assembly as set forth in claim 8 wherein each of said front and rear guides includes an elongated slot.

10. A retractable roof assembly as set forth in claim 9 wherein said carrier assembly includes spaced apart front and rear legs fixedly secured to said first roof panel and slidably engaging said elongated slots of said respective front and rear guides for selectively raising said first roof panel and allowing rearward movement thereof over a portion of said second roof panel.

11. A retractable roof assembly as set forth in claim 10 including a slide mechanism slidably engaging said movable rail and operably connected to said third roof panel.

12. A retractable roof assembly as set forth in claim 11 including a pivot arm pivotally interconnected between said slide mechanism and said third panel such that sliding movement of said slide mechanism selectively lifts said third panel to receive said first and second panels thereunder to position said plurality of panels in said stacked configuration.

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13. A retractable roof assembly as set forth in claim 12 including an air deflector disposed forward of said first roof panel and selectively held down thereby.

14. A retractable roof assembly as set forth in claim 13 including a receptacle disposed behind the rear seat for receiving said plurality of roof panels.

15. A split rail assembly for a motor vehicle having spaced apart roof side frame members defining a roof opening and a plurality of roof panels selectively extending between the roof side frame members to cover the roof opening, said split rail assembly comprising:

a fixed rail adapted to be fixedly secured to each of the roof side frame members and extending along a portion thereof; and

a movable rail extending rearward of said fixed rail along a remaining portion of each of the roof side frame members, said movable rail pivotal relative to said fixed rail for moving the plurality of roof panels away from the roof side frame members to expose the roof opening.

16. A split rail assembly as set forth in claim 15 including a rail locking mechanism coupled to said movable rail for selectively locking said movable rail to said fixed rail.

17. A split rail assembly as set forth in claim 16 including a panel support structure fixedly secured to said movable rail for supporting the plurality of panels during pivotal movement of said movable rail relative to said fixed rail.

18. A split rail assembly as set forth in claim 17 wherein said fixed rail includes a locking tab extending out therefrom.

19. A split rail assembly as set forth in claim 18 wherein said movable rail includes a locator pin for engaging said locking tab to align said fixed and movable rails to one another as said rail locking mechanism locks said movable rail to said fixed rail.

AMENDED SHEET

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20. A retractable roof for a motor vehicle having a roof opening and a rear seat, said retractable roof comprising:

a plurality of roof panels movable between a closed position covering the roof opening, an intermediate position partially covering the roof opening, and a stowed position behind the rear seat to expose the entire roof opening; and

a linkage assembly operably connected to said plurality of roof panels for pivoting said plurality of roof panels into said stowed position behind the rear seat of the motor vehicle.

21. A retractable roof as set forth in claim 20 including an actuator operably coupled to said linkage assembly for actuating pivotal movement of said plurality of panels into said stowed position.

22. A retractable roof as set forth in claim 21 including a panel support structure for supporting said plurality of panels during movement thereof into said stowed position.

23. A retractable roof as set forth in claim 22 wherein said plurality of panels includes a forward first panel, an intermediate second panel, and a rearward third panel.

24. A method of retracting a roof, having first, second, and third roof panels selectively covering a roof opening, into a space behind a rear seat of a motor vehicle, the method comprising the steps of:

- (a) moving the first roof panel vertically relative to the second roof panel;
- (b) sliding the first roof panel towards the second roof panel to partially open the roof;
- (c) coupling the first roof panel to the second roof panel;
- (d) moving the coupled first and second roof panels to the third roof panel; and
- (e) pivoting the first, second, and third roof panels into the space behind the rear seat to expose the entire roof opening.

AMENDED SHEET

25. A method as set forth in claim 24, including enabling the vehicle operator to maintain the first and second roof panels in an overlapping arrangement thereby providing an intermediate position partially covering the roof opening.

26. A method as set forth in claim 25 including displacing the third roof panel relative to the first and second roof panels prior to the step of moving the coupled first and second roof panels to the third roof panel.

27. A method as set forth in claim 26 including the step of adjusting the position of the third roof panel relative to the first and second roof panels to stack the first, second, and third panels subsequent to the step of moving the coupled first and second roof panels to the third roof panel.

Abstract

A retractable roof assembly (53) is provided for a motor vehicle (10) having a rear seat (24) and spaced apart roof side frame members (30) defining a roof opening (31). The retractable roof assembly (53) includes a split rail assembly (33) having a fixed rail (34) adapted to be fixedly secured to each of the roof side frame members (30) and extending along a portion thereof, and a movable rail (40) extending rearward of the fixed rail (34) along a remaining portion of each of the roof side frame members (30). A plurality of roof panels (58, 60, 62) extends between the roof side frame members (30) and slidably engages the split rail assembly (33) for selective movement into a stacked configuration above the movable rail (40). A linkage assembly (254) is operably connected to the movable rail (40) for pivoting and articulating the movable rail (40) relative to the fixed rail (34) when the plurality of roof panels (58, 60, 62) is in the stacked configuration in order to stow the plurality of roof panels (58, 60, 62) behind the rear seat (24) of the motor vehicle (10) such that the entire roof opening (31) is exposed.